DOCUMENT RESUME

ED 330 527 RC 018 077

TITLE Bridging Early Childhood and Nature Education. Proceedings of the Roger Tory Peterson Institute of Natural History Forum (1990).
INSTITUTION Roger Tory Peterson Inst. of Natural History, Inc., Jamestown, NY.
PUB DATE 91
NOTE 29p.
PUB TYPE Collected Works - Conference Proceedings (021) -- Guides - Classroom Use - Teaching Guides (For Teacher) (052)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Age Differences; Concept Formation; *Discovery Learning; *Early Childhood Education; Educational Benefits; Educational Objectives; Educational Planning; *Environmental Education; *Experiential Learning; Learning Activities; Ornithology; *Outdoor Education
IDENTIFIERS *Nature Study

ABSTRACT

This report was written to extend the findings of the Roger Tory Peterson Institute's 1990 forum on early-childhood environmental education. The report begins with an overview of Peterson's own childhood experiences that influenced his career as a naturalist. Peterson developed a hands-on interest in nature as a very young boy. His case is not uncommon. Educators have long realized the value of experiential education for elementary students. Nature education helps children gain a respect for life, stimulates their curiosity, and provides them with meaningful life experiences. Nature study is defined as a platform for engaging the whole child in experiences that provide a basis for understanding environmental relationships. It can take place in any location where the natural world is observed. Participants in the Peterson forum agreed that nature-education activities for young children should differ from those planned for older children. Foremost among guidelines for selecting young children's nature activities is the goal of providing them with firsthand experiences. It is important to keep nature experiences developmentally appropriate in terms of both age and individuality. Developmental appropriateness provides a framework for selecting learning experiences that are compatible with predictable sequences of growth and change within young children. The document offers goals and guidelines for selecting nature-study activities, and discusses bird-watching and nature walks, two activities teachers can choose. (TES)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED330527

Bridging Early Childhood and Nature Education

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Roger Tory Peterson Inst.
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

/ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Roger Tory Peterson Institute
of Natural History

BEST COPY AVAILABLE

RC 018077

Bridging Early Childhood and Nature Education

Proceedings of the 1990 Forum
sponsored by the

Roger Tory Peterson Institute
of Natural History

John D. Hamilton
Chairman of the Board of Trustees

Arthur M. Klebanoff
President

William L. Sharp
Director of Education Programs

In Memorium

William H. Wendel

This report is dedicated to the memory of William Wendel who, at the time of his death on December 1, 1990, was a trustee for the Roger Tory Peterson Institute, a fellow bird watcher and, of these mutual associations, a good friend.

The mission of the Peterson Institute is to instill passion and knowledge of the natural world in the hearts and minds of children, a mission Bill Wendel supported with the fervor of someone newly ordained but with the wisdom of someone of his experience and maturity. Bill was one of only two industrialists on our board, and he brought a needed point of view--one of balance. Gifted with a keen sense of process and the interconnectedness of the sectors of our universe, he gave us much needed overviews. When the rest of us, inclined to be academicians, imagined great dreams, Bill never forsook the dreams, but he added the dimensions of reality. As counsel he was among the wisest, and he will be irreplaceable.

William Wendel was a birder, but with aplomb, a grace that set him apart. His was not the interest of fad and fashion, nor did he seek to win the title of most birds seen. All of us birded together in Florida and Texas in conjunction with our meetings, meetings planned to coincide with migrations. He might say, on seeing a flash of red, "Woodpecker, I think--hairy or downy--but, by golly, a pretty sight." His was a quest for the beauty of it, the beauty of birds and their special place among whatever heavens may be, as children of whatever gods may be. For him, each bird was an embodiment of all birds and the wonder they represent with their blithe spirits.

On behalf of his fellow trustees of the Peterson Institute, I pay homage to our friend, a friend whose memory will be with us at every meeting. We wish him godspeed and good birding in the place that we have yet to know.

Paul A. Benke
Chairman Emeritus

Our Thanks
to those who provided photos and art for use in this report

Front cover and page 10:
Jeffrey Froke

In Memorium:
photo courtesy of the Carborundum Company

This page and pages 2 & 4:
courtesy Roger Tory Peterson

Pages 5 & 17:
Richard Cohen

Pages 7, 19 & 20 (top):
Roger Roselli

Page 9:
William Sharp

Pages 14 & 16:
David Knotts

Pages 20 (bottom) & 21:
Dave Anderson

.....CONTENTS

Introduction 1

What shapes a naturalist? 2

The value of nature experiences for young children 5

What is nature study? 7

Nature study activities 12

How children think and learn 15

A discussion of developmental appropriateness

Applying the concept of developmental appropriateness

Summary 18

Notes on forum participants 19

© 1991 Roger Tory Peterson Institute of Natural History
RTPI is a not-for-profit educational organization chartered by the State of New York in 1984

Introduction

Roger Tory Peterson is the father of bird watching as a popular pastime. Through publication of his *Field Guide to the Birds* he has enriched the lives of millions of people worldwide. His mission in life has been to make the natural world the "real world" for humanity. The establishment of the Roger Tory Peterson Institute in 1984 ensures that his mission will be realized.

The Institute is especially interested in children and nature, and its trustees have resolved to promote an understanding of both the intellectual and emotional linkages of children to the natural world. We believe that close ties to nature made in early life will become lifelong bonds, and that ultimately, children will grow to form a generation of adults who are knowledgeable and passionate about wild places and wild things.

As a matter of practicality and to maximize our ability to reach children, we have followed the advice of Roger Tory Peterson "to teach the teachers and their teachers" about nature education and effective methods of delivery. One way of reaching large numbers of teachers is through conferences and publications. The Institute's recent forum, *Bridging Early Childhood and Nature Education*, aimed to define and promote the value of nature experiences for young children. The participants were individuals eager to share their knowledge; they were leading naturalists and child development specialists from across the country.

This report is written for the purpose of extending to you the findings of *Bridging Early Childhood and Nature Education*. It represents the outcomes of the forum's facilitated small group discussions. Beginning with an overview of Roger Tory Peterson's recollections of childhood experiences that influenced his development as a naturalist, the report goes on to affirm the value of nature education for young children, and offer some basic reference questions, a discussion of developmental appropriateness and guidelines for selecting activities for young children.

It is our hope that the report will stimulate, reinforce and guide teachers in their efforts to enhance the wholesome development of children.

Thanks goes to Jeffrey Froke whose inspiration and leadership played a large role in the conception and realization of the forum. We are grateful to the trustees of the Margaret L. Wendt Foundation of Buffalo, New York, whose generous grant covered the expenses of the forum and this publication. Let us all work to assure that the Foundation's grant will become a sound investment in the intelligence and happiness of children in nature.

What shapes a naturalist?

Boyhood recollections of
Roger Tory Peterson

Roger Tory Peterson is a native son of Jamestown, a small city in western New York state. Located in the rolling, wooded hills near Lake Chautauqua, Jamestown played a significant role in Dr. Peterson's life. It is there that his boyhood interest in birds and moths is rooted, and his development into a world class naturalist began.

Standing in a room that had once been the home of a school friend, Dr. Peterson recalled those early life experiences that led to his distinguished career. Was there one experience that led him to become so attached to the natural world? If so, when did it occur, and what are the lessons we can take from his life that will aid us in our mission to help interest others in natural history? His remarks, excerpted below, set the tone of the forum and served as the keynote address.

It's marvelous to be here. Standing in this room I remember an old friend and classmate, Ralph Sheldon, who lived in this house. It is because my cousins lived up the street that I used to collect moths around the street lights here when I was about thirteen.

I found that the big moths were very exciting. The problem was that they didn't come around to life until about 9:15 p.m. At the time, we had a curfew law in this town, and when the curfew bell rang the kids had to be off the streets.

I went to Chief Johnson, Chief of Police, and told him my story and he typed me out a permit. "This permits Roger Peterson to collect moths around street lights until 11:00 p.m."

I said, "Well, can I get my friend Benny Shapiro in on this, because he's my assistant?"

Benny and I did this thing and some of the other kids would watch us. When a local cop would come around they would scatter and watch from behind the houses while we'd pull out our permit.

In those days I was looked at as somewhat of an oddball. Today, it's very different. I appeared in Jamestown a few years ago to give a lecture and about fifteen hundred people showed up. This is very different and probably the only person who could outdo me would be Lucille Ball, if she were still alive. (Lucy was also a Jamestown area native.)

See again, she was a rebel—a school dropout. I say that mostly because the educational process sometimes is too much, and the person who takes a chance once in a while might make the breakthrough.

I might give you an example of a breakthrough. In a sense, we wouldn't have the *Field Guide* if I hadn't jumped one grade in the

beginning—or skipped first grade. That's always put me a little behind the eight ball because that meant the kids [I associated with] were a little bit older. I was a nuisance and just went my own way and watched birds.

Had it not been for a young red-haired teacher by the name of Blanche Hornbeck, I would not be where I am today. At the age of eleven, when I entered the seventh grade in Jamestown, New York, I was a rebellious kid without an anchor or a rudder. Miss Hornbeck gave me both when she formed the Junior Audubon Club in early spring of that year.

I've often wondered why in that classroom of twenty-five or thirty that I became hooked on birds for life. Now the others all obtained an interest and were sympathetic toward the natural world, but I was the only one that made a career of it. Birds became an obsession from which I never freed myself. Reflecting on this, I suspect that I was turned on by an event on my very first field trip.

I can recall even the exact date and time. It was April 8, 1920, in the early morning when Carl Hammerstrom and I crossed the railroad tracks and climbed Swede Hill to explore new territory. As we entered the grove of maples beyond the edge of town, where the old reservoir is, I spotted a bundle of brown feathers clinging to the trunk of a tree. It was a flicker. It was asleep, but I thought it was dead.

So, very gingerly, I touched it on the back and the thing exploded into life all of a sudden, with a wild look in its eye. The red piece on the back of its head showed and, in a flash of bright yellow wings, it flew away.

Well, it was that explosion that did it. It seemed like an inert, dead thing was very much alive. It was like a resurrection, an affirmation of life. Ever since then birds have seemed to me to be the most vivid expression of life. The natural world became my real world. I used to call the real world the "unreal" world.

Today, with our concern for environmental literacy, I believe that kids, especially younger ones, do not start with an ecological concept. They acquire it by using specific springboards such as birds, plants, or whatever. To expect youngsters to become instant ecologists is presumptuous. A recent Yale study by Kellert and Westervelt on children's attitudes toward nature indicates that between the fifth and eighth grades, youngsters readily absorb actual knowledge about animal life and names of animals. Then from the eighth to eleventh grades they gain a deepening concern for wildlife protection and a greater understanding of the ecological concept. This confirms my own views on teaching kids. I think feelings must come first, then the names of things come next--what they do and where they live --and then concepts follow.

As can be seen from Roger Tory Peterson's life and the lives of other great men and women of science, they developed a serious interest in the study of birds and other aspects of the natural world sometime after six years of age.

On the other hand, nature education can play an important role in the cognitive, social and emotional development of much younger children.

In subsequent sections of this report, we will show that nature provides a rich source of experience upon which children depend in order to grow intellectually. It provides the hands-on experiences children need to involve themselves in learning about ancillary topics, cause and effect, transitions and interactions with people and with other things. Early learning experiences are all-important because they provide the foundation for intellectual development and future success as a learner.

The value of nature experiences for young children

The case of a young Roger Tory Peterson developing life-long interests and recognizable attitudes as a boy of eleven is not all that uncommon. Educators have long recognized the importance of the middle years as a hands-on, exploratory period in which children start to set a direction in their lives. Awareness of this developmental stage has led to the establishment of middle schools as well as youth programs like scouting.

What, then, is the value of introducing nature to children from birth to age eight? In response to a pre-forum questionnaire, participants identified five rationales that establish the value of nature education in early childhood.

Nature education provides foundation experiences.

Children develop cognitively and emotionally by making sense of their immediate environment. In early life they make sense of their world and the effects of their actions on it. This lays the foundation which, in turn, will influence the way they understand later events. According to Kathryn Girard, early childhood specialist from Pacific Oaks College, if we want children to develop an understanding and love of nature, they need regular, meaningful experiences with nature. This is particularly true in urban settings where there may be many barriers between children and their natural world experiences.

Nature's beauty and patterns transcend language and race.

The value of nature experiences also lies in their ability to transcend differences of language and race. They are fundamental to the development of attitudes about beauty, pattern and predictability. Early childhood educator

Maritza Macdonald sees nothing more connecting between small children than common experiences. Watching a crab crawl, a worm wriggle or a tadpole grow legs are fascinating, all encompassing events. The knowledge and feelings that young children experience in this context transcend differences of language and race.

Nature provides a real life context for children's books.

Most caring parents read to their young children. The subjects of children's books are often household pets, farm animals, wild birds and wild animals. Real life experiences in nature give substance to the stories in books. Naturalist Richard Fischer suggests that nature experiences play an important role in bringing children into contact with reality.

Nature experiences stimulate curiosity.

Naturalist and nature educator Elisha Atkins holds that "the most important purpose to teaching children about nature is to stimulate their curiosity and interest in natural objects that exist around them."

Nature experiences help children develop a respect for life.

Early childhood educator James Garbarino sees the value of nature experiences in their ability to help children develop an empathic, personal orientation toward other living things.

Naturalist and educator Elizabeth Atkins has seen a tendency for children's natural curiosity to develop into a level of picking and poking that is destructive to living things, if the children are not taught otherwise. Her experience has shown that nature education which teaches children about relationships and the importance of all living things is a way of turning these impulses around.

Miriam Westervelt, naturalist and educational researcher, has documented that children who experience nature education develop a respect for the interrelationships among all living things.

What is nature study?
...and other key questions

If you were a naturalist and you had the opportunity to chat with a leading expert on early childhood education, what questions would you ask? Conversely, if you were an early childhood educator and you could talk with a world renowned naturalist, what would you like to know? This was the scenario at the opening of the forum *Bridging Early Childhood and Nature Education*.

To facilitate the sharing process between early childhood educators and naturalists, each group was first asked to independently develop key questions about the relationship between nature study and young children. A small-group brainstorming process was used in which questions were generated, consolidated, prioritized and selected. The combined list of ten questions was chosen for discussion by small groups composed of both early childhood educators and naturalists during the forum:

- What is nature study?
- What is included in nature study?
- Where does nature study happen?
- What is a naturalist?
- What is appropriate for young children?
- What can stimulate a child's interest in nature?
- How important is it for children to learn the facts and names of objects in the natural world?
- What can parents do?
- How do we use television for positive learning?
- How can we influence the future direction of the media?

In a subsequent session, naturalists and early childhood educators were grouped together to clarify questions and fashion responses for each other. What follows is a summary and interpretation of each question as prepared by the mixed teams.

What is nature study?

Nature study is bringing children into contact with living things and supporting their exploration. This is valuable because it helps to stimulate curiosity and environmental awareness, and it provides a basis for understanding relationships. Our modern living patterns, however, make nature study less accessible and nature more abstract. Nature study is more important today

than it has ever been because we face so many environmental crises. Large numbers of children need nature study because of its potential as a therapeutic, healing experience.

The purpose of nature study is to cultivate in children a personal enjoyment of:

- The diversity of natural life.
- The interrelationship of living things.
- The beauty of natural life.
- The joy of life.

With nature study, the development of attitudes is as important as information which a child might learn.

What is included in nature study?

People are part of the natural world, and nature study should focus (largely) on the living things that share the world with people. Rocks, stars and other aspects of the universe may be included, but more as background information than as objects of study in themselves. Nature study deals with living organisms as they occur in their native habitats, rather than with phenomena that occur within the limitations of scientific experimental design. Scientists and naturalists share a curiosity about the natural world and a desire to understand it better. They also share methods, including observation, classification, naming and others.

Since fewer natural habitats may be immediately available (or considered to be valuable) in urban environments, it may be a difficult task to find opportunities for children of the cities to interact with a variety of natural organisms. Field trips, television programs and museums may be important as instructional aids. In beginning an urban nature study program it is important to find nature experience in a child's own locality. In poor urban environments, natural creatures may not be cherished as legitimate objects of study and thus, appealing organisms for study may be more limited.

Where does nature study happen?

Nature study can happen anywhere some element of nature can be observed. It is not limited to the outside. Natural processes occur in the urban environment. Wherever one starts, though, it is important to go further afield, and to bring those experiences back to children's everyday lives.

What is a naturalist?

A naturalist is a person who has made an intellectual and emotional commitment to exploring living organisms in their environments. A naturalist has an attachment to knowing and caring about nature as a whole. This is similar to the concept of child development, where the concern is with the whole child.

What is appropriate for young children?

Young children learn through direct experience and play. This includes tasting, touching, smelling, hearing, seeing and feeling appropriate natural objects. These direct experiences can open children's curiosity about themselves and should form the basis for children's play. Exposure to the natural

world needs to be repeated and integrated in order to allow learning to take place and for the experiences be meaningful. Like the development of literacy, children need to sense that the adults who are important in their own lives are also involved with nature. Children need to sense the curiosity and wonder felt by these adults.

When curiosity is not supported in the early years, children require more dramatic experiences in adolescence in order to develop an interest in nature. When nature is not a part of a child's regular experience, fears of nature develop. These make later exploration at any age difficult. Children can be uncomfortable or fearful with new experiences.

What can stimulate children's interest in nature?

In order to introduce nature study successfully, teachers need to feel confident about their own knowledge. They need to know that they can trust their own curiosity, their own abilities to learn with children and their abilities to seek out resources. Teachers need their own direct experiences with nature. It is vital that they cultivate their own senses of curiosity and wonder, even if these experiences are limited. Part of this involves learning through exploration--discovery learning--where connections and concepts emerge and grow. Teachers need to be aware of the importance of sensory experiences for children, and they need to overcome negative attitudes toward the "mess and untidiness" that accompanies the exploration of living things. As teachers integrate nature experiences in the classroom, the practicalities of managing such projects become easier.

Nature study does not need to be a separate part of the curriculum, but can serve as a vehicle for teaching much of what young children need to learn, including foundation reading and writing skills.

How important is it for children to learn the facts and names of objects in the natural world?

For factual information to be meaningful to children, it needs to be based on direct experience. The nature experience itself will create a positive emotional response. This should stimulate curiosity and, we hope, motivate the child to explore the natural world in greater depth.

A child needs to have a mental image of an object to be curious enough to want to know its name. This mental picture is acquired through experience with the object. When objects have names, people, big and little, know that they are discussing the same thing. Names are more than labels; they are carriers of mental images resulting from experience.

Classification of objects in a child's world functions to sort and organize. Some children are natural classifiers while others are not. Children devise various classification systems, however, which are personally meaningful. These systems may not initially match accepted scientific classification schemes. This is not a matter of concern, however. Over time, with continued exposure to nature and nature education, children will construct classification systems which increasingly approximate those used by scientists.

What can parents do?

Parents who wish to encourage their children to become interested in the natural world must demonstrate in their own behavior a reverence and respect for all things in nature. It is through parents' attitudes towards animals and plants that children formulate their own attitudes. Young children learn through experiences mediated by adults who are important to them and whom they respect, and parents are usually the most significant adults in children's lives. Parents have the opportunity to tell children stories of their own experiences with nature, and this can connect what children are learning about nature to their own family background.

Experiences that children have with live, natural "models" provides them with information and helps shape their attitudes. When using wild animals, children need to be taught to observe them rather than to socialize with them.

How do we use television for positive learning?

We can counteract excessive use of television by providing direct experiences with nature, as well as by improving television productions that are available for very young children to view. The early experiences that naturalists say were most influential in directing their lives were affective, emotional and direct experiences with the natural world. In early childhood, real experiences are fundamental.

One limitation to the use of television is that children can't ask questions of the teacher or parent. In turn, it is difficult to lead the child to make his or her own discoveries. Because of television, computers and other electronic media, we are realizing to an increasing degree just how extensively simulation has replaced real world experiences. To encourage children to gather information firsthand from nature, they need help from adults who can guide them in relating televized information to real world experiences.

How can we influence the future direction of the media?

Media should not be the only form of instruction. Media can be used as a resource that supplements real, hands-on experiences. Developing interactive media is important for active learning, particularly when the child is in control of selecting the direction of inquiry. Interactive media can also offer learning opportunities about other cultural settings to include global and multicultural dimensions of nature study.

Educators can seek out or develop media resources which include nature study in the context of the daily lives of young viewers through dramatic productions. Development of positive values and interaction with the natural world can be viewed as part of a universal experience, rather than as the unique concern of the naturalist or conservationist.

It has been demonstrated through research that television can have a definite, positive impact on improving children's attitudes and knowledge about wildlife.

Instructional videos about wildlife can serve as an excellent springboard for developing interest in the natural world. Their value can probably best be demonstrated in urban settings where opportunities for direct contact with the natural world are more limited.

Teachers and parents must be discerning about the types of programs they encourage children to view. For very young viewers, effective educational television programs about wildlife typically include these elements:

- Sound scientific facts about nature are presented within the framework of a dramatic story line (versus a disconnected presentation of many facts that are unrelated).
- In dramatic story lines, young viewers relate to peers who demonstrate abilities and skills regarding the natural world, offering the child an effective emotional experience that is important to this age.
- Multicultural and global perspectives are considered important; some are related to urban/rural issues, others to culture and resources, and others to global interdependence.

Nature study activities:
Goals and guidelines

One objective of this forum was to define considerations for selecting activities for young children that provide enriching and age-appropriate natural world experiences. Listed below are goals and guidelines on how to select, plan and carry out nature study activities.

Goals for nature study

It is important to start the planning of any nature experience with some thought about what goals underlie the nature study activities. What do you hope the child will gain from the experience? Where does it fit into the overall program? Care should be taken that activities not become an end to themselves but are part of an overall plan.

Having said that, there is one goal that supersedes all others. It is simply that the child have firsthand adult-mediated experiences with the natural world. It is important to limit expectations for meeting specific, purely cognitive objectives (e.g., knowing lists of specific plants or animals) and focus on the young child's experience. An activity can draw children's attention to many new aspects of their world, stimulating their awareness of nature as part of their everyday life. Yet parents and teachers cannot predict or even plan for specific outcomes from activities before they happen. They must be alert to the child's interests and reactions and adapt subsequent experiences to address these outcomes. In short, what young children will *do* can and should be planned; what each child will *learn* cannot be. The teacher or parent must create individual learning experiences for each child.

Suggested goals for nature study include:

- Provide children with opportunities to observe, describe and record their experiences in the natural world.
- Enable children to explore and understand relationships.
- Allow for concept development by having children generate, validate and interpret hypotheses and make conclusions from their investigations.
- Expose children to other people's interests while sharing their own.
- Teach the proper handling of living things.
- Develop positive attitudes toward the natural world.
- Develop aesthetic appreciation.

Guidelines for selecting activities

The context in which activities will occur is important. Is the activity part of an overall plan? How will this activity be linked to other activities? What else are the children and the people around them doing which relate to this activity? Are there social and cultural issues to consider?

It is also important to consider questions that concern the activity itself. Does it have a clear beginning and end? Will children experience a sense of completion? Will the activity lead to other projects? Some points to consider include:

- Make experiences safe, particularly in tasting and touching natural items.
- Consider the appropriateness of the activity for the children's ages. (See a discussion of developmental appropriateness which follows these guidelines.)
- Use the results of research regarding which activities work.
- Prepare children for interacting with and thinking about any living organism or natural environment. For instance, before bringing an animal into the classroom, discuss with the class what is needed to keep it alive, their responsibilities in caring for it, proper handling, and interrelationships in nature. As part of this preparation, check guidelines about the care and treatment of classroom animals. For field trips, focus on children's behavior and attitudes through rehearsals and role play.
- Deal with children's (and their parents') fears about nature by discussing particular species such as snakes and spiders. Help them distinguish between unfounded and realistic fears through discussion and observation.
- Make sure teachers and parents are comfortable with nature and able to find answers to questions a child may ask.
- Base activities in their social context. Consider the location, culture and language as well as any biases in the community in relation to the activity.
- Involve all the child's senses to smell, touch, taste and hear nature as well as to see it.
- Encourage creative interpretation of nature themes and experiences in activities such as story-telling, puppet shows, art and music.
- Watch what children are interested in and take your cues from there. Start from their outlook and interests, but introduce yours as well.
- Allow children to discover things for themselves.
- Develop "what if" activities which allow children to make and follow predictions about nature.
- Recognize that discontinuity is more fascinating to children than subtle change. Examples include watching an egg change into a chicken or snow change into water.

- Use flexible activities that allow you to accommodate open-ended teaching. These provide a large number of unplanned learning outcomes.
- Link activities by following seasonal changes, and develop on-going relationships with nature centers and local experts. Revisit special places.
- Be aware of the fragility of some natural objects or environments, taking care not to damage them with your activities.
- Incorporate the teacher's interests and knowledge, available resources and children's interests into planning activities.
- Value nature as it exists in each community. Pigeons, where they live and where they feed, are of as much concern to the urban child as beavers are to the rural child. If we value the uniqueness of a community, that respect is carried to other communities in our future.
- Incorporate global concerns through activities such as recycling.
- As children view an activity from a different perspective, deal with their reactions. When a question arises, be willing to teach the appropriate concept, such as the cycle of birth and death. Follow up on additional questions and reactions after the activity ends.
- Provide coordination between television programs about nature and special class activities.
- Involve family members.
- Develop suggested activities that families can do at the park on weekends.
- Use print media such as newspaper articles, newsletters and magazines to help families learn about nature programs and activities available locally.

How children think and learn

A discussion of developmental appropriateness

The concept of developmental appropriateness is central to the issue of choosing and managing nature experiences for young children. The National Association for the Education of Young Children (NAEYC) defines the concept as comprising two dimensions: age appropriateness and individual appropriateness.[1]

Age appropriateness refers to the framework from which teachers plan learning experiences that are compatible with predictable sequences of growth and change that occur within children from birth to age eight. It also encompasses the concept of **individual appropriateness** which recognizes that each child exhibits a unique pattern in his or her timing of both growth and learning style.

Teachers and parents are advised to use their knowledge of child development to identify appropriate learning activities and materials for a specific age group. Play is recognized as both a vehicle and an indicator of cognitive, social and emotional growth. It is an essential component of developmentally appropriate learning experiences for young children.

Listed below are excerpts of NAEYC's guidelines for the development of curriculum for young children.

- Provide for all areas of a child's development: physical, emotional, social and cognitive, and use an integrated approach.
- Base planning on the teacher's observations and recordings of each child's special interests and developmental progress.
- Emphasize learning as an interactive process. Activities and materials must be concrete and relevant to the lives of young children.
- Be prepared to meet the needs of children who exhibit interests and skills *outside* the normal developmental range.
- As children develop understanding and skills, increase the complexity, difficulty and challenge of learning activities.

[1] For a full description see *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8*, Sue Bredekamp, editor. National Association for the Education of Young Children, Washington, 1986.

Applying the concept of developmental appropriateness

Consider the two typical nature activities of bird watching and nature walks from the perspective of the concept of developmental appropriateness.

Bird watching

Bird watching can be done with young children, provided that the focus is on noticing and understanding what birds are versus their identification and classification. For example, naming and identifying birds as a specific learning objective may be more appropriate for older children than for three- and four-year olds.

To watch birds, young children must first notice them. They need to know what makes birds different from themselves: birds chirp and fly, and they live in different places. The goal is to allow children to experience birds by looking and listening to them. What they learn from this activity will vary. Teachers and parents should be ready to answer children's questions about what different birds are and why these differences matter.

Some children will show great interest and ability in distinguishing birds. If they exhibit an unusual interest this should be encouraged regardless of the child's chronological age. For others, it is sufficient simply to be able to notice birds in nature. The decision must be based on the teacher's observations of each child's special interests and progress.

Bird watching, as a direct experience with nature, can be integrated into other activities and play that provide for physical, social and cognitive development of children.

Things to consider

- Children will retain the names of birds and attach meaning to those names when they have a conceptual framework for what a bird is. For young children, this framework is not limited to the birds' specific attributes, but can include parts of the context. Adults cannot predict what will be significant for each child, but they can help children link the bird and its name to the activity and location where the learning took place.
- Children take pride in knowing what something is. Naming birds can occur at a very young age if a child is interested. However, it may not be a reasonable teaching objective for children younger than six.
- Matching and naming activities are possible at a much younger age than is identification of differences.
- Identifying birds on the move can be difficult and frustrating for young children.

Nature Walks

Nature walks are appropriate activities for children of all ages. For younger children the walk should be oriented around sensory experiences of touching, smelling, hearing and seeing. For older children, the walks may be more concept and relationship oriented. A specific task, such as a treasure hunt, makes the walk more focused.

A nature walk is an activity which can be done in many different places, and it can accommodate a variety of learning goals. It provides children with a direct nature experience that allows them to:

- Observe and describe their surroundings.
- Make comparisons, identify and classify the environment.
- Get fresh air in their lungs (where available).
- Develop concepts of interdependence.
- Understand the impact of humans on the natural environment.
- Develop aesthetic appreciation.
- Explore the facts of life and nature's cycles.

For very young children, the flexible structure and agenda of a nature walk permits coordinating the activity with their own spontaneous interests. An important aspect of nature walks is that there are often unexpected events and learning consequences. Some of these the teacher will observe and build on; others will remain hidden. Each child will gain something different from the experience.

Things to consider

- To prepare for a nature walk, know the area yourself. "Prime the pump" by telling children what they are going to do.
- Take walks at different times of the year for continuity.
- Focus on respect for living things and the landscape.
- Communicate respect for dangerous things and situations.
- Direct activities so as not to be destructive or disruptive to the area you visit. Remind children that they are the "guests" who are visiting the "homes" of other plants and animals.
- Help children distinguish dangerous from safe objects.
- Help children distinguish "dead" from "alive."
- Deal with any fears children may express by discussing them prior to the walk.

Summary

Bridging Early Childhood and Nature Education attests to the importance of reaching children early with experiences that lay the foundation for igniting a passion for nature in the next generation. Some key results of the forum are summarized here.

Roger Tory Peterson can point to several boyhood experiences that led to his lifelong passion for the natural world. It is astounding that the power of the seemingly insignificant event of a bird waking up to fly away at the touch of a boy's hand could have sparked an interest that has ultimately influenced uncounted millions of others to become more closely attuned to the natural world.

Early childhood educators and naturalists share a common commitment to exploring the wholeness of their respective interests: for the former, the wholeness of nature and for the latter, the development the whole child.

For young children, nature study is defined as a platform for engaging the whole child in experiences that provide a basis for understanding environmental relationships and for developing appropriate attitudes toward nature. Nature study can happen anywhere that some element of the natural world can be observed. Ideally, it should be practiced ever farther afield from our familiar world.

The idea that nature experiences are valuable for the proper development of young children was undisputed among our forum participants. The purposes of activities for young children, however, differ from those planned for older children. We must view play as the mechanism by which young children grow intellectually, and recognize the central value of nature activities as a rich resource of play experiences.

In considering guidelines for selecting nature activities for young children, it is important to start with a goal. One goal supersedes all others: that of providing the child with firsthand experiences with the natural world.

A central issue in choosing and managing nature experiences for young children is the concept of developmental appropriateness, which embodies the dual dimensions of age and individuality. Developmental appropriateness provides a framework for selecting learning experiences that are compatible with predictable sequences of growth and change that occur within young children. At the same time, we must recognize that each child develops according to his or her own time schedule.

We are hopeful that these findings, as distilled from the deliberations of our expert panel, will support work toward providing appropriate early childhood experiences with the natural world. One such project, now underway in Pasadena, California, is the RTPI/Pacific Oaks College preschool nature study unit, which will be ready for field testing in 1991-92. Other similar projects are to be encouraged. Where possible, RTPI sees its mission as seeking ways to support valid work in this field.

Notes on forum participants

Roger and Virginia Peterson headed the list of noted naturalists who attended the forum.

Elisha Atkins, M.D., is Professor of Medicine (emeritus) at Yale University. He is a longtime amateur naturalist and birder, and as a teenager, Dr. Atkins was Roger Tory Peterson's student at Camp Chewonki in Wiscasset, ME. He has been Director of Habitat Institute for the Environment since 1985, and he serves on the boards of the Massachusetts Audubon Society and the Lloyd Center for Environmental Studies in New Bedford, MA.

Elizabeth P. Atkins holds degrees from Bryn Mawr College and the University of Bridgeport. Currently she is a teacher-naturalist at Habitat Institute for the Environment. Now retired from a teaching career with the New Haven, CT, schools, she has worked with Brownie troops, cooperative nursery schools, and elementary level education. Raising five children and being married to an enthusiastic nature lover contributed to her interest in childhood education and nature study.

Barbara T. Bowman is Director of Graduate Studies at the Erikson Institute for Advanced Study in Child Development, Chicago, IL. She is an early childhood specialist with degrees from Sarah Lawrence College and the University of Chicago. She has been both a teacher of young children and of teachers, focusing on curriculum for young children, particularly math and science. Ms. Bowman is past president of the National Association for the Education of Young Children, and she writes and speaks frequently on issues affecting young children and their families.

Richard Cohen, Ph.D., is Director of the Research Center at Pacific Oaks College, Pasadena, CA. He holds a Ph.D. in Education from UCLA and an Ed.M. from the Harvard School of Education. Dr. Cohen has experience as a preschool and elementary teacher and background in educational evaluation and teacher education.

Richard B. Fischer, Ph.D., is Professor Emeritus of Environmental Education at Cornell University. He holds degrees in biology, education and zoology from Queens College, Columbia University and Cornell. Until his retirement in 1985, Dr. Fischer continued Cornell's support of the nature study movement as begun by Liberty Hyde Bailey. He trained naturalists and environmental educators for thirty-three years. His students now occupy major positions in nature centers, public interest groups and organizations such as the National Audubon Society and the National Wildlife Federation. He is a writer and nature photographer as well.

James Garbarino, Ph.D., is President of the Erikson Institute for Advanced Study in Child Development. He earned his doctorate in Human Development and Family Studies at Cornell University. Dr. Garbarino is a teacher, researcher and author on child development and human ecology, as well as the parent of two children. He and his family spend summers on a small island in the Adirondacks in an intensive and enduring nature education experience.

Kathryn Lee Girard, Ed.D., is Director of Research and Development and Computing at Pacific Oaks College and Children's School, Pasadena, CA. She holds a a B.A. from Bennington College and her graduate degrees are from

Early childhood specialists Kathryn Girard and James Garbarino defined goals and guidelines for teachers of young children.

the University of Massachusetts/Amherst. Her graduate work was in the field of curriculum and evaluation. She has extensive experience in designing curricula and conducting program evaluations. Dr. Girard is currently playing a major role in shaping the partnership with RTPI and Pacific Oaks to develop a nature study curriculum for preschool children.

Maritza B. Macdonald is Director of the Teacher Education Program and Professor of Early Childhood Curriculum at Bank Street College of Education in New York City. Ms. Macdonald is actively involved in curriculum development and consultation with programs which serve children who speak languages other than English. She finds the study of natural sciences to be a good vehicle for learning concepts and a second language effectively. Her contributions at the forum focused on the importance of rich nature experiences in early childhood programs serving multicultural populations.

Naturalist Richard Fischer and early childhood specialist Barbara Bowman each brought significant experience and points of view to forum work sessions.

Erlene Minton is the in-house resident staff development consultant for the Orange Unified School District in Orange, CA. She holds a B.A. in Education from the University of Colorado and an M.A. in Administration from Chapman College. Until recently she was Director of Staff Development responsible for training and clinical supervision. She is a recipient of the Outstanding Contributions to Education Award by the Orange County Department of Education. She is co-creator of a model program for increasing teaching effectiveness and has trained several thousands of teachers throughout the United States, Canada, Europe and Asia.

Roger Tory Peterson is author and illustrator of the most influential bird book of all time. He is recognized internationally as an ornithologist, writer, artist and lecturer. He studied at the Art Students League in New York City and the National Academy of Design. Following a three-year instructorship in science and art at the Rivers School in Brookline, MA, Dr. Peterson began a career of bird painting and nature illustration. His first success came in 1934

with the publication of his *Field Guide to the Birds* which, together with other books in the Peterson Field Guide Series, have become the standard reference for millions of bird watchers worldwide. He is a former Director of Education for the National Audubon Society. Among the many honors, awards and honorary degrees conferred upon Dr. Peterson in recognition of his contributions are the Presidential Medal of Freedom awarded by President Carter in 1980 and nomination for the Nobel Peace Prize in 1983.

Virginia Marie Peterson is actively engaged in producing books with her husband, Roger Tory Peterson. Her lifelong interest in research began while she was at Harvard University where she was involved with underwater acoustics. Later, she authored the U.S. Coast Guard *Infrared Field Manual for Oil Spill Identification*. For her work in enabling the Coast Guard to detect those who pollute seas and waterways she received official commendation by the U.S. Government. Mrs. Peterson researched and prepared the range maps for hundreds of species of birds for both *A Field Guide to the Birds* and *A Field Guide to Western Birds*. In addition to traveling and photographing wildlife around the world, Mrs. Peterson has a keen interest in butterfly gardening. Her gardens, which have been featured on national television, in magazines and in newspapers, have generated considerable interest in these elegant insects.

Miriam Olivia Westervelt is a graduate of Skidmore College with a degree in animal behavior. As Associate in Research at Yale University's School of Forestry and Environmental Studies, she conducted pioneering research into how attitudes towards animals develop as children grow older. Ms. Westervelt is a social scientist with the U.S. Fish and Wildlife Service in Washington, DC. She is Program Director for a project sponsored by the National Fish and Wildlife Foundation to produce instructional videotapes about wildlife habitat for elementary school children.

Roger Tory Peterson Institute *of Natural History*

The Roger Tory Peterson Institute is a national, non-profit 501(c)(3) organization whose mission is "to inform society about the natural world through the study and teaching of natural history."

RTPI reaches children through their parents and teachers, and encourages lifelong learning about the natural world for people of all ages.

To obtain additional copies of this document or a listing of other publications, contact RTPI's headquarters at the address below.

RTPI
110 Marvin Parkway
Jamestown • New York • 14701
716/665-2473 • FAX 716/6653794

STAFF

Carrie S. Cadwell
Director of Development and Public Affairs

William L. Sharp
Director of Education Programs

Linda M. Pierce
Membership Manager/Secretary

Anita L. Seaberg
Communications Manager

Lynn A. Wilcox
Office Manager

OFFICERS & TRUSTEES

Roger Tory Peterson
Honorary Chairman

John D. Hamilton
Chairman of the Board

Arthur M. Klebanoff
President

Noble S. Proctor
Vice Chairman

Dallas K. Beal
Secretary

John D. Hamilton
Treasurer

R. Quintus Anderson

S. Benton Basham

Paul A. Benke
Chairman Emeritus

Howard P. Brokaw

Virginia M. Peterson

Elliot L. Richardson

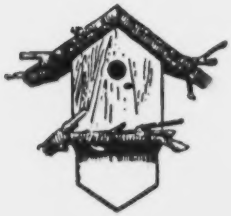
James R. Schlesinger

Lloyd A. Wright

Publication of this document was made possible by grants from the state of New York and the Margaret L. Wendt Foundation.

Roger Tory Peterson
Institute *of Natural History*

110 Marvin Parkway
Jamestown • New York • 14701



Non-Profit Org.
U.S. Postage
PAID
Jamestown, NY
Permit No. 360